

# **Background Document on Retesting Frequency for the Hazardous Waste Identification Rule September, 1999**

## **Introduction**

This document discusses retesting frequency for HWIR exempted waste streams based on the annual volume of these waste streams and their form. Because liquids are generally more homogeneous than non-liquids (semi-solids and solids) and because liquids are produced in much greater volumes than non-liquids, we believe that greater amounts of liquid waste can be managed before retesting must occur. (Recall that liquids are defined to have less than 1 percent total suspended solids. Further discussion of these waste form definitions can be found in the preamble to the proposed regulation and in the background document entitled *Correlation between Liquid, Sludge and Solid Waste Forms and Surface Impoundments, Land Application Units, and Landfill Disposal Options* (U.S. EPA, 1999-a)).

To require the same retesting frequencies for liquids and non-liquids would mean relatively small quantities of liquids being retested often or relatively large volumes of solids becoming exempt without retesting. We contend that differentiating the frequency of retesting based on form does not compromise the protectiveness of the continued HWIR exemption and provides more reasonable requirements on the claimant.

Larger amounts of waste have the potential of greater environmental risk than smaller amounts. Therefore, it is reasonable to require larger generators of waste to retest more frequently than smaller generators of waste. This background document explains how the volume categories and retesting frequencies were established for the proposed HWIR regulation.

## **What do we know about the distribution of waste streams by volume?**

We examined data from both OSW's 1996 National Hazardous Waste Constituent Survey (NHWCS) and OSW's 1995 Biennial Reporting System (BRS) to understand the distribution of waste generation across waste streams. Both the NHWCS and the BRS are national surveys of industrial hazardous waste generation and management practices. Consistent with historic analysis of the hazardous waste universe, a relatively small number of industrial facilities generate a relatively large percentage of all hazardous waste, as evidenced by the following data:

Average for all waste and all generators = 10,257 tons / generator<sup>1</sup>

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<sup>1</sup> 1995 BRS: Total Waste reported as 214,092,505 tons; total number of generators = 20,873.

Average for top 50 waste generators = 3,565,395 tons / generator<sup>2</sup>  
Average for non-top 50 waste generators = 1,720 tons / generator

Average for top 119 waste generators = 1,562,491 tons / generator (est. of minimum)<sup>3</sup>  
Average for non-top 119 waste generators = 1,357 tons / generator (est. of maximum)<sup>4</sup>

Source: U.S. EPA, *The National Biennial RCRA Hazardous Waste Report (Based on 1995 Data)* -- National Analysis, August, 1997, EPA530-R-97-022c.

Most generators therefore generate approximately 1,400 tons per year. These averages do not take into account waste form. Annual generation of wastewater streams tend to be much more sizable than non-wastewater streams and therefore, the average for wastewaters would be expected to be higher (much higher) than 1,400 tons per year and the average for non-wastewaters would be expected to be lower. In addition, for both wastewaters and non-wastewaters a small fraction of waste streams dominate total generation.

These observations are confirmed by looking at wastewater and non-wastewater streams separately and the top 50 streams in each waste form category -- quantities are expressed in tons / generator<sup>5</sup>:

Average wastewater stream = 20,418  
Avg. wastewater stream for top 50 wastewater generators = 3,522,270  
Avg. wastewater stream for non-top 50 wastewater generators = 2,664  
Top 50 wastewater streams represent 87% of total wastewater quantity.

Average non-wastewater stream = 607  
Avg. non-wastewater stream for top 50 non-wastewater generators = 112,827  
Avg. non-wastewater stream for non-top 50 non-wastewater generators = 315

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<sup>2</sup> 1995 BRS: total waste for top 50 waste generators = 178,269,725 tons

<sup>3</sup> 1995 BRS, Exhibit 1.8 presents a histogram of generator quantity ranges and number of generators. 119 generators were reported to have generated over 111,113.2 tons in 1995. By using the total generation of the top 50 presented in Exhibit 1.7 and assuming that the remaining generators (69) generated 111,113.2 tons in 1995, we come up with our minimum estimate. This estimate is a minimum because any or all of these 69 generators could have generated more than 111,113.2 tons in 1995.

<sup>4</sup> By subtracting the amount of generation calculated in footnote 3 from the total and considering all generators apart from the top 119, we come up with our maximum estimate. If any or all of the top 119 generated more than estimated, then total generation remaining for the non-top 119 would be less, and therefore, what is presented is a maximum.

<sup>5</sup> 1995 BRS: 9,912 wastewater generators; 19,302 non-wastewater generators. Total wastewater and non-wastewater quantities presented in Exhibit 1.9. Top 50 wastewater generators presented in Exhibit 1.10. Top 50 non-wastewater generators attached as Appendix A.

Top 50 non-wastewater streams represent 48% of total non-wastewater quantity.

For all streams and those within and outside the top 50 streams by volume, the annual generation of wastewater streams is appreciably larger than non-wastewater streams.

### **What is the Basis for Establishing Waste Retesting Frequencies?**

Having made the above observations with data from the broader hazardous waste universe, we used OSW's National Hazardous Waste Constituent Survey (NHWCS) to construct specific volume categories to determine retesting frequency for the HWIR proposal. This survey is central to the HWIR regulatory analysis because it provides unique information on chemical constituent identity and concentrations within industrial waste streams from waste generators and waste treatment facilities.

The following information represents the distribution of waste streams by volume and form within the NHWCS:

Wastewaters (Total number of streams in NHWCS = 2,013)

More than half the wastewaters streams were below 150 tons / year  
Approximately one quarter of the wastewater streams were above 1,400 tons / year

Of additional importance is how much waste are contained within these waste streams.  
Considering waste streams weighted by waste volume (# of streams in parentheses):

**Approximately 20% of the waste was in streams (1,940) below 35,000 tons / year**

**More than half the waste was in streams (1,999) below 500,000 tons / year**

Approximately one quarter of the waste was in streams (3) above 1e6 tons /yr

Non-wastewaters (Total number of streams in NHWCS = 6,531)

More than half the non-wastewater streams were below 10 tons / year  
Approximately one quarter of the non-wastewater streams were above 60 tons / year

Again, of additional importance is how much waste is contained in these streams.  
Considering waste streams weighted by waste volume:

**Approximately 20% of the waste was in streams (6,314) below 2,000 tons / year**

**Approximately half the waste was in streams (6,493) below 10,000 tons / year**

Approximately 15% of the waste was in streams (8) above 41,152 tons / year

Source: U.S. EPA, *National Hazardous Waste Constituent Survey: Summary Report*, October, 1998. Also see underlying database.

Again, because larger amounts of waste have the potential for greater environmental risk, we therefore impose the most frequent testing requirements on these larger streams. Two thresholds were selected for more versus less testing and were established for the waste stream size (1) the first threshold set above which approximately half the waste is represented; and (2) the second threshold set below which approximately one-fifth of the waste is represented.

The NHWCS was sent to the largest generators and managers of hazardous waste, because they account for a relatively large percentage of industrial waste generated in the U.S. Consequently, the survey does not necessarily provide representative information on smaller waste streams. Establishing thresholds for more or less testing based on the distribution of waste across waste stream size is therefore slightly skewed, because of this absence of smaller waste streams. The current analysis establishes thresholds higher than they would have been had all waste streams been considered. Waste streams near the threshold will have less frequent testing requirements than those that would have been established using information from the entire waste stream universe.

However, based on historic impact analyses, larger streams are more likely to take advantage of the HWIR exemption<sup>6</sup>, and therefore, the use of the NHWCS targeted to those streams is reasonable and appropriate.

In matching the BRS and NHWCS data with the HWIR proposal, we equate the terms “wastewater” as used in the BRS and the NHWCS, with the definition of “liquids” used in the proposed regulation.<sup>7</sup> The HWIR term “liquids” would encompass “wastewaters” because of the possible inclusion of wastes with high organic content. Additional discussion of these waste forms is provided in the HWIR preamble.

In a similar way, we have used information related to non-wastewaters within the BRS and the NHWCS to derive volume categories for “non-liquids” in the HWIR proposal – waste included as “semi-solids” and “solids” and defined to have total suspended solids greater than or equal

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<sup>6</sup> Larger streams are more likely to take advantage of an HWIR exemption because the testing and other HWIR implementation costs necessary to be eligible for the exemption may be cost prohibitive to smaller generators.

<sup>7</sup> Within the BRS, a waste is considered wastewater if the BRS form code is B101, B102, B105, or B110-116, or the BRS system type code is M071-079, M081-085, M089, M091-094, M099, M121-125, M129, or M134-136. (These codes are contained within the documentation for the 1995 BRS).

The NHWCS relies on the respondent’s designation of whether the waste stream is a wastewater or not. See the *National Hazardous Waste Constituent Survey: Summary Report*, Prepared by Industrial Economics Inc. for the U.S. EPA Office of Solid Waste, July, 1999).

to 1 percent. Again, see the HWIR proposal for definitions of these industrial waste form categories.

### **How Many Testing Events Should There Be Each Year?**

We determined the frequency of testing events to balance the burden of frequent testing with the need for accountability. In order to ensure that generators continue to characterize their waste streams and that enforcement officials have confidence that generators remain in compliance with the HWIR exemption levels, periodic testing is important. As a minimum, we believed that testing at least once a year was appropriate. Instances of repeat testing, for example, in the delisting program, range from once a year to daily. (see Table 2, 40 CFR 261 Appendix IX). In an effort to reduce testing burden and with the stated preference of having fewer testing events at which more samples were taken (rather than more events with fewer samples), we chose semi-annual and quarterly time intervals for retesting to be performed. The explicit requirement for more frequent testing was thought unnecessary because the waste generated is assumed to come from a consistent process; any significant process change requires immediate retesting.

We require testing at regular time intervals throughout the year, rather than allowing a generator to independently choose when such tests would be conducted. We did not want to provide a flexibility to generators that they could use to “game the system”; generators might choose most favorable sampling times within a calendar year, when hazardous chemicals present in the waste stream might be at relatively lower concentrations.

### **What testing frequencies are being proposed as a result of this analysis?**

The table below presents our proposed retesting frequencies based on the categorization discussed in this document:

<b>If your waste is a liquid and it is generated in quantities</b>	<b>Then you must test your waste stream</b>
Less than 35,000 tons/year	Every 12 Months
Between 35,000 and 500,000 tons/year	Every 6 Months
Over 500,000 tons/year	Every 3 Months

<b>If your waste is a non-liquid (that is, a solid or semi-solid) and it is generated in quantities</b>	<b>Then you must test your waste stream</b>
Less than 2,000 tons/year	Every 12 Months
Between 2,000 and 10,000 tons/year	Every 6 Months
Over 10,000 tons/year	Every 3 Months

## Appendix A: Top Fifty Generators of Non-Wastewaters

Source: 1995 Biennial Reporting System (BRS)

EPA ID	HANDLER NAME	CITY	STATE	TONS GENERATED
1 ILD064403199	MOBIL OIL CORP	JOLIET	IL	960,344
2 IDD070929518	FMC CORP PHOSPHORUS CHEMICALS GROUP	POCATELLO	ID	505,623
3 ILD080012305	SHELL WOOD RIVER REFINING CO	ROXANA	IL	277,680
4 TND003376928	TENN EASTMAN DIVISION OF EASTMAN CHEMICA	KINGSPORT	TN	221,105
5 TXD008080533	AMOCO OIL COMPANY	Texas City	TX	203,337
6 TXD008123317	DU PONT DE NEMOURS & CO., E.I.	Victoria	TX	144,879
7 WID066874207	STRATTEC SECURITY CORP	GLENDALE	WI	144,818
8 TXD008092793	THE DOW CHEMICAL COMPANY, TEXAS OPERATIO	Freeport	TX	139,231
9 MID000724724	DOW CHEMICAL CO-MIDLAND PLANT SITE	MIDLAND	MI	136,639
10 NJD002454544	MARISOL INC	MIDDLESEX	NJ	131,626
11 ILD006278170	ALLIED-SIGNAL INC	METROPOLIS	IL	122,100
12 TXD008079642	E.I. DUPONT DE NEMOURS & COMPANY	Orange	TX	121,572
13 MAR000006726	QUANTUM CORP.	SHREWBURY	MA	115,450
14 MAD062163191	POLAROID CORPORATION	NORWOOD	MA	112,969
15 ALD046481032	SANDERS LEAD COMPANY, INC.	TROY	AL	110,715
16 NYD049836679	CWM CHEMICAL SERVICES, INC.	MODEL CITY	NY	108,411
17 ILD984832311	GATTO INDUSTRIAL PLATERS INC	CHICAGO	IL	101,187
18 LAD000777201	CHEMICAL WASTE MANAGEMENT	SULPHUR	LA	98,659
19 TX0000201202	TEXACO CHEMICAL, INC.	Port Neches	TX	84,117
20 WID054105218	MASTER LOCK CO	MILWAUKEE	WI	82,792
21 TXD990797714	MOBIL OIL CORPORATION	Beaumont	TX	81,690
22 WID046536231	VULCAN MATERIALS CO-VULCAN CHEMICALS DI	PORT EDWARWI		81,304
23 IND000810861	AMOCO OIL COMPANY WHITING LAKEFRONT	WHITING	IN	75,463
24 ILD005263157	NORTHWESTERN	STERLING	IL	73,779
25 KYD053348108	SAFETY-KLEEN	SMITHFIELD	KY	70,890
26 TXD055141378	ROLLINS ENVIRONMENTAL SERVICES (TX), INC	Deer Park	TX	70,887
27 IND093219012	HERITAGE ENVIRONMENTAL SERVICES INC	INDIANAPOLISIN		68,235
28 MID980615298	PETRO-CHEM PROC. GRP., NORTRU INC	DETROIT	MI	68,102
29 TXD102684370	BAYTANK (HOUSTON) INC.	Seabrook	TX	67,642
30 ILD005119839	US FILTER/IWT	ROCKFORD	IL	63,889
31 ILD005070537	CATERPILLAR INC	JOLIET	IL	61,655
32 COD991300484	HIGHWAY 36 LAND DEVELOPMENT CORP	DEER TRAIL	CO	58,545
33 IND000717959	GENERAL BATTERY/EXIDE CORP.	MUNCIE	IN	57,959
34 CAD067786749	BKK LANDFILL	WEST COVIN/CA		55,411
35 TXD058265067	ARCO CHEMICAL COMPANY	PASADENA	TX	54,539
36 TXD083472266	ARCO CHEMICAL COMPANY	Channelview	TX	54,249
37 NJD002385730	E I DUPONT DE NEMOURS & CO INC	DEEPWATER	NJ	53,931
38 TXD007330202	TEXAS EASTMAN DIVISION	Longview	TX	51,383
39 ILD000805812	PEORIA DISPOSAL CO INC	PEORIA	IL	51,158
40 IND006050967	ELI LILLY & CO.-TIPPECANOE LABORATORIES	SHADELAND, IN		50,331
41 TXD008132268	COASTAL REFINING & MARKETING, INC.	Corpus Christi	TX	48,920
42 ILT180014698	PRECOAT METALS	GRANITE CITYIL		48,175
43 ARD981057870	RINECO	BENTON	AR	48,059
44 OHD005108477	ARISTECH CHEMICAL CORPORATION	HAVERHILL	OH	46,016
45 TXD007376700	HOECHST	CELANESE CHEMIC,Pampa	TX	43,981
46 ILD049813256	PRECOAT	METALS	CHICAGO	43,301
47 MID000724831	MICHIGAN DISPOSAL WASTE TREATMENT PLANT	BELLEVILLE	MI	43,259
48 PAD980550594	SUN CO INC MARCUS HOOK REFINERY	MARCUS HOOPA		42,943
49 ILD010284248	CID RECYCLING & DISP FAC	CALUMET CITIL		41,247
50 LAD008086506	PPG INDUSTRIES, INC.	WESTLAKE	LA	41,132
				5,641,330